

## "What's This?" - Visual Tour

This **tour** will **guide** you through the layout and operation of [IMBA Professional Plus](#)' three working screens, and the tools provided for data entry, export, and visualization:

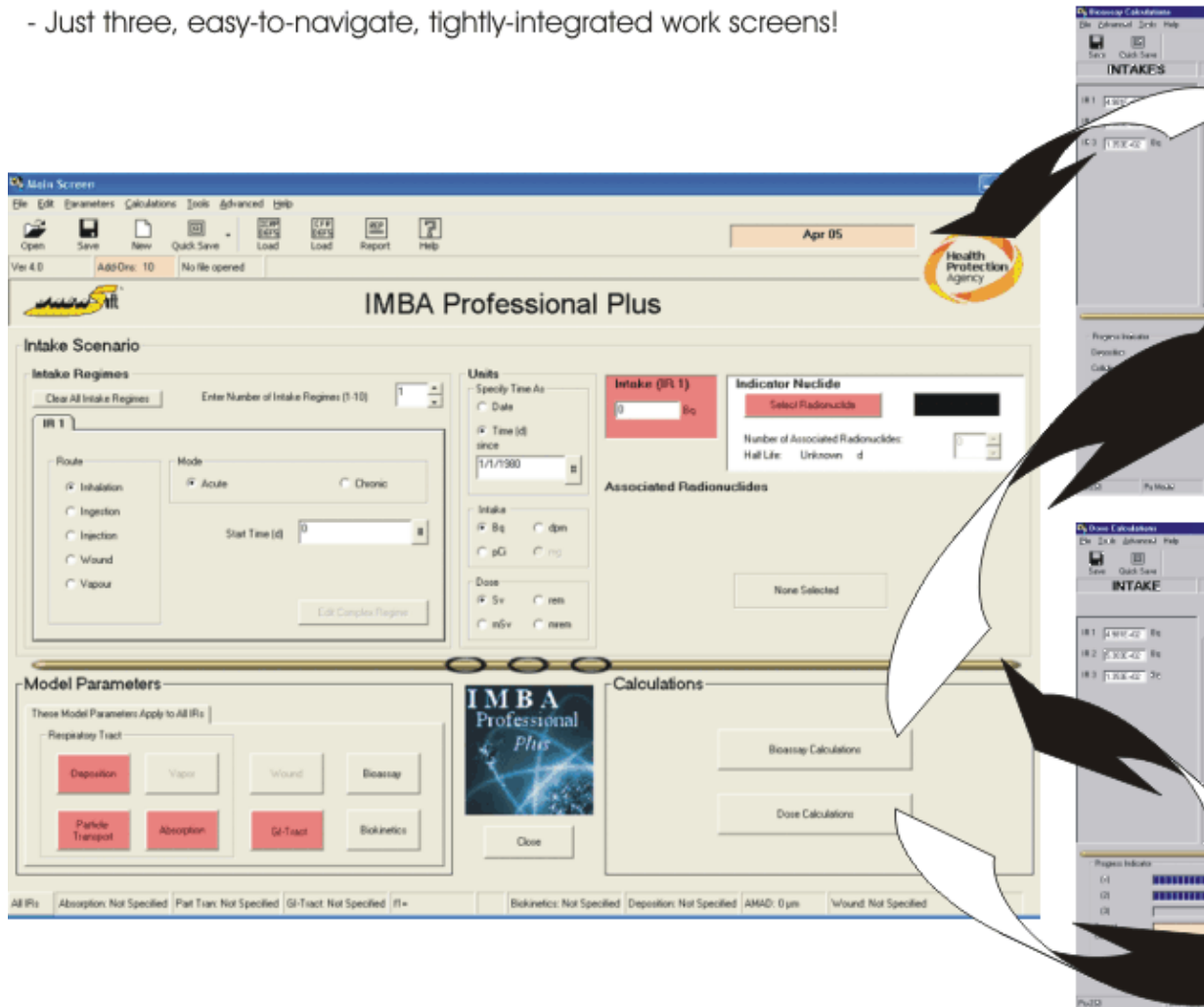
1. [Main Screen](#) (Opening Screen).
2. [Bioassay Calculations](#) Screen.
  - [Table Tool](#) (for data entry, editing, export)
  - [Graph Tool](#) (for data visualization)
3. [Dose Calculations](#) Screen.

## Visual Tour of Main Screen



# IMBA Professional Plus

- Just three, easy-to-navigate, tightly-integrated work screens!



# Radionuclide Database (ICRP Publication 38)

**Intake Scenario**

Intake Regimes: Enter Number of Intake Regimes (1-10)

Route:  Inhalation,  Ingestion,  Injection,  Inward,  Vapor

Mode:  Acute,  Chronic

Start Time (d): 0

Units: Specify Time As:  Date,  Time (d) since

Intake:  Bq,  dpm,  pCi,  mCi

Dose:  Sv,  rem,  mSv,  mrem

Indicator Nuclide: Am-241

Number of Associated Radionuclides: 0

Half Life: 157800 d

**Model Parameters**

These Model Parameters Apply to All IRs

Respiratory Tract:

GI Tract:

Calculations:

**Energies of decay products of Am-241 [MeV]**

| Alpha    |          | Beta   |       | Electron |          | Positron |       | Photon   |          |
|----------|----------|--------|-------|----------|----------|----------|-------|----------|----------|
| Energy   | Yield    | Energy | Yield | Energy   | Yield    | Energy   | Yield | Energy   | Yield    |
| 5.39E+00 | 1.40E-02 |        |       | 3.92E-03 | 2.94E-02 |          |       | 2.63E-02 | 2.40E-02 |
| 5.44E+00 | 1.28E-01 |        |       | 4.74E-03 | 5.61E-02 |          |       |          |          |
| 5.49E+00 | 8.52E-01 |        |       | 8.74E-03 | 7.32E-02 |          |       |          |          |
| 5.51E+00 | 2.00E-03 |        |       | 2.19E-02 | 4.12E-02 |          |       |          |          |
| 5.54E+00 | 3.40E-03 |        |       | 2.63E-02 | 1.61E-02 |          |       |          |          |
|          |          |        |       | 9.76E-03 | 7.27E-03 |          |       |          |          |
|          |          |        |       | 1.06E-02 | 2.23E-01 |          |       |          |          |
|          |          |        |       | 1.46E-02 | 2.06E-01 |          |       |          |          |
|          |          |        |       | 2.78E-02 | 1.20E-01 |          |       |          |          |
|          |          |        |       | 3.22E-02 | 4.76E-02 |          |       |          |          |
|          |          |        |       | 1.08E-02 | 1.09E-01 |          |       |          |          |
|          |          |        |       | 1.16E-02 | 3.58E-02 |          |       |          |          |
|          |          |        |       | 1.56E-02 | 2.19E-02 |          |       |          |          |
|          |          |        |       | 2.88E-02 | 4.20E-02 |          |       |          |          |
|          |          |        |       | 3.32E-02 | 1.66E-02 |          |       |          |          |
|          |          |        |       | 2.10E-02 | 2.72E-02 |          |       |          |          |
|          |          |        |       | 2.18E-02 | 3.47E-02 |          |       |          |          |
|          |          |        |       | 2.58E-02 | 2.76E-02 |          |       |          |          |
|          |          |        |       | 3.90E-02 | 2.38E-02 |          |       |          |          |
|          |          |        |       | 4.34E-02 | 9.07E-03 |          |       |          |          |

**Decay Information**

Radionuclide: Americium-241

Atomic No.: 95 Mass No.: 241

Half-life (d): 1.578E+05

This radionuclide only has one daughter

Branching ratio:

Mode of decay of parent:

Radionuclide: Neptunium-237

Half-life (d): 7.811E+08

**Decay chain**

Units of half-life: d

Click on a radionuclide

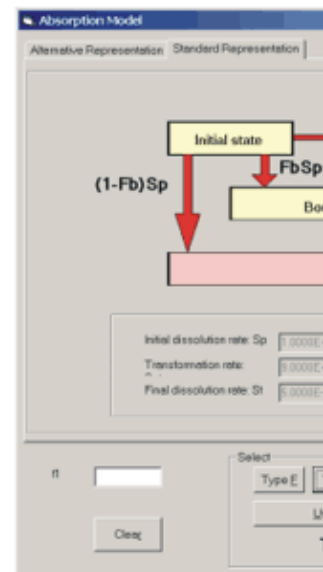
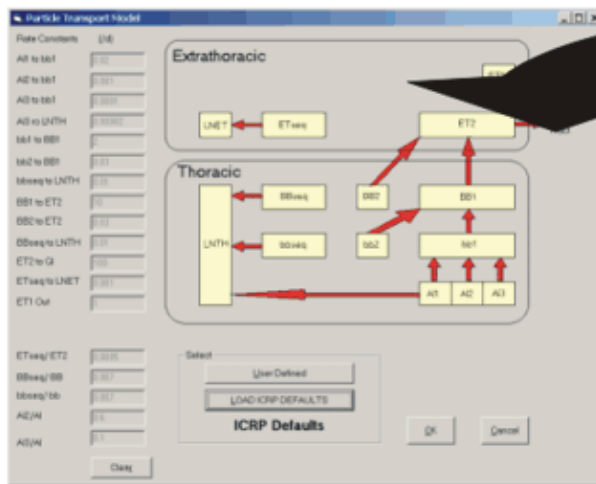
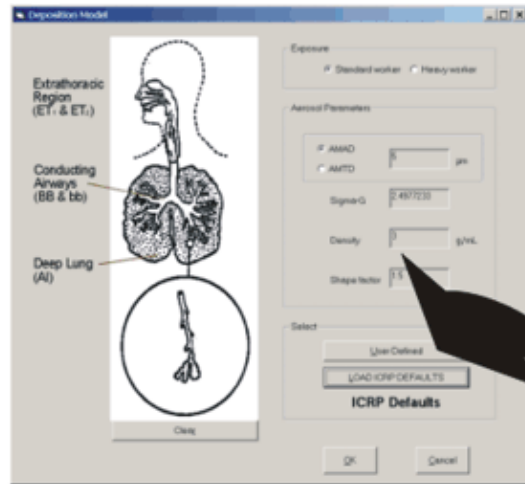
Ra 88

225 Ra 88

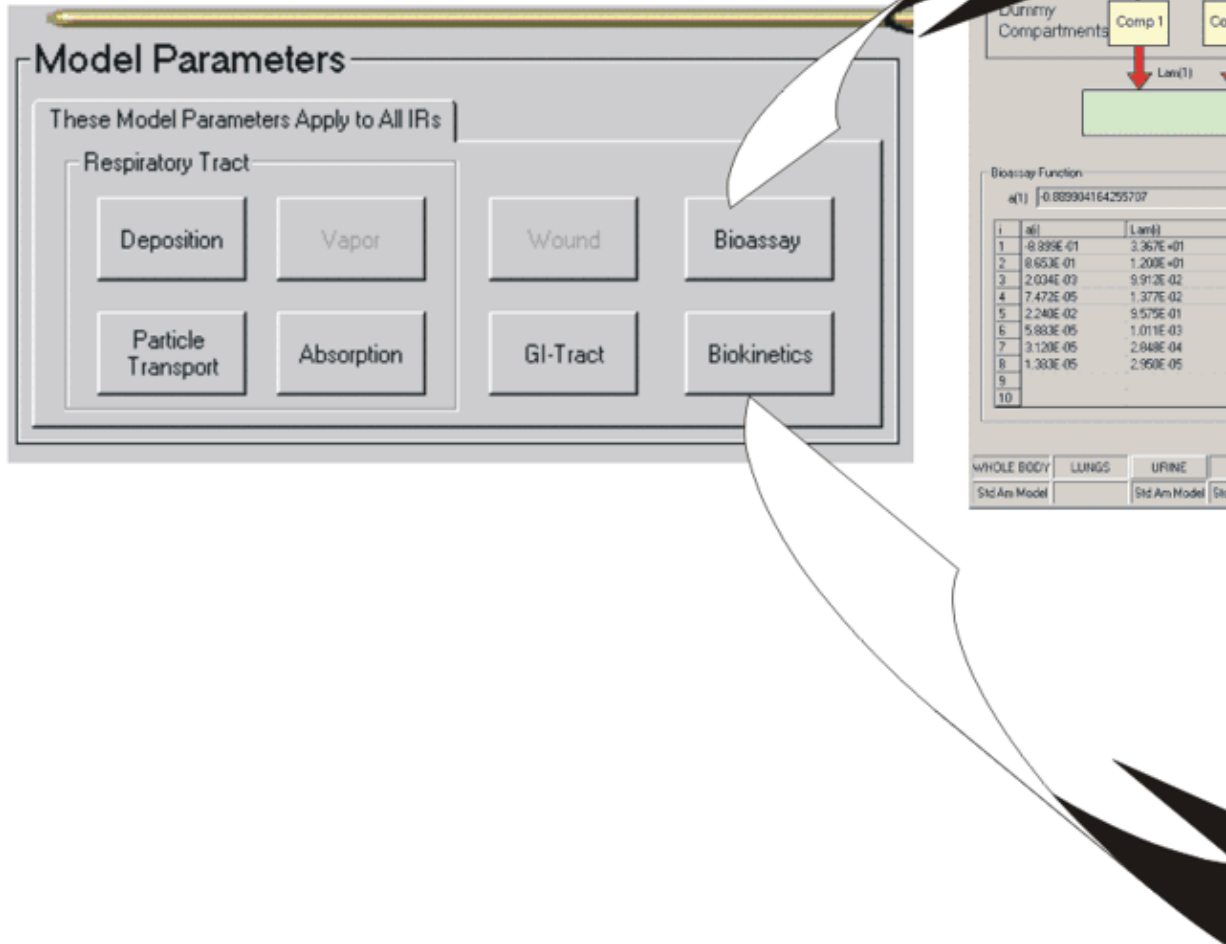
1.5E+01 d

β-

# Respiratory Tract and Gut Models



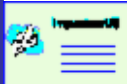
# Biokinetic and Bioassay Models



**Tip:** If you needed to scroll to see the right-edge of those images - or if you see only part of the "pop-ups" on the right of the "Feature Tour" below - try **enlarging** the viewing panel by **dragging the left border** over the "Contents | Index | Search" panel!

Feature Tour:

Click on a **HOT ZONE** in the figure below - for a "pop-up" description of the function of that part of the screen (and/or control).



**Note:** Except for the "greyed out" items, ALL of the features shown in Figure 2.5 (below) are fully functional in [IMBA Professional \(Full Edition\) Version 3.0](#). The pop-ups indicate which of these functions are "Star" features - and therefore not available in the basic [Lite-Edition](#). See also [Additional Functionality in "Star" and "Professional" Editions](#).

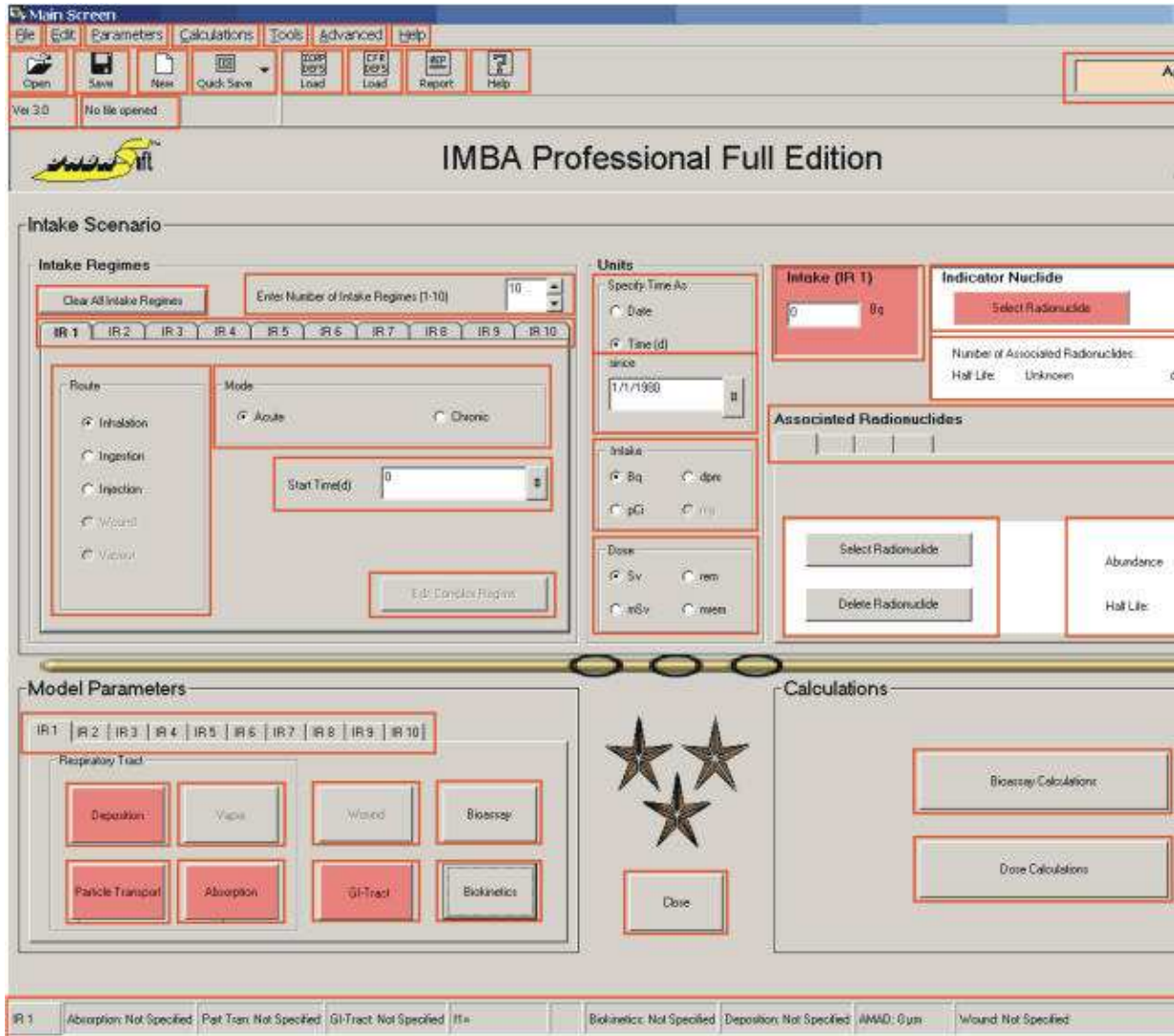
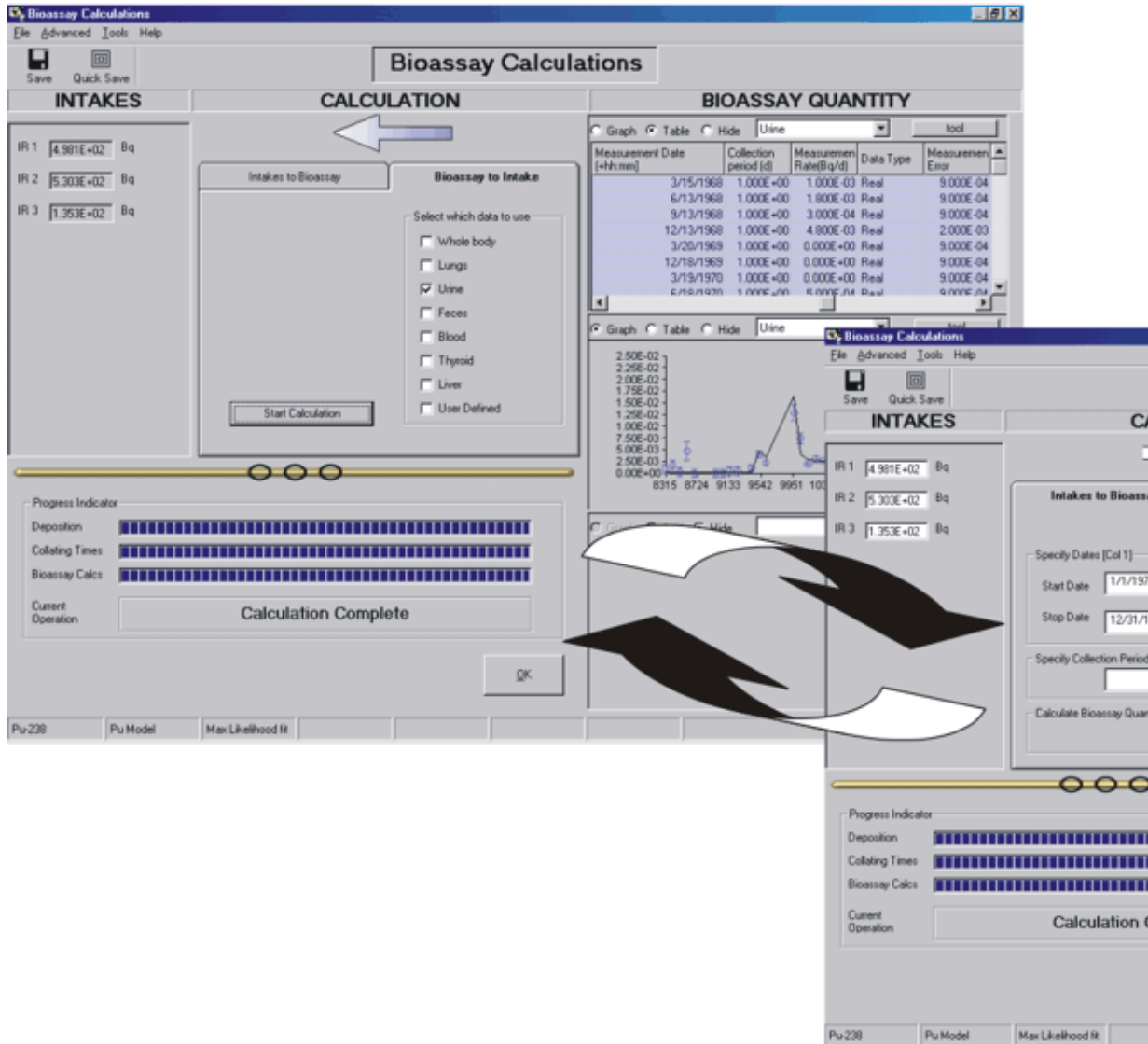


Figure 2.5. What's in the **Main Screen**?

## Visual Tour of Bioassay Calculations Screen



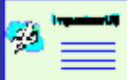


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Feature Tour:

Click on a **HOT ZONE** below (in either figure) - for a "pop-up" description of the function of that part of the screen (and/or control):

- Figure 2.7: Screen in default "**Bioassay to Intake**" mode.
- Figure 2.8: Screen in selectable "**Intakes to Bioassay**" mode.



**Note:** The "multiple intake" function shown in Figures 2.7 and 2.8 (below), and the ability to analyse several bioassay quantities simultaneously, are "**Star**" features - and therefore not available in the basic **Lite-Edition**. See also [Additional Functionality in "Star" and "Professional" Editions](#).



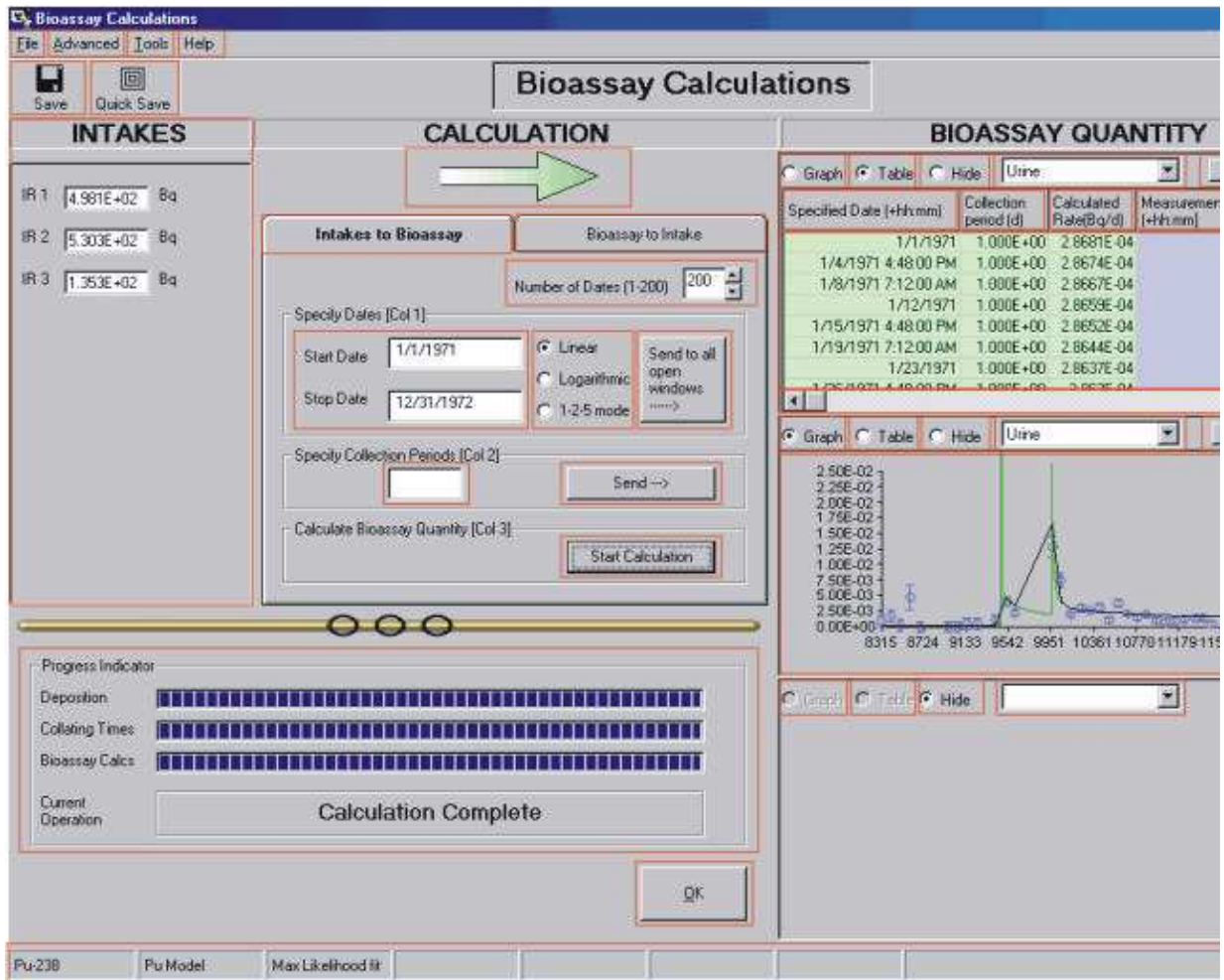


Figure 2.8. Bioassay Calculations screen with "Intakes to Bioassay" mode selected.

## Visual Tour of the Table Tool



**Table Tool: Urine Data**

| Specified Time (d) | Collection period |
|--------------------|-------------------|
| 1.000E+00          | 1.0               |
| 1.092733547E+00    | 1.0               |
| 1.194066606E+00    | 1.0               |
| 1.304796638E+00    | 1.0               |
| 1.425795059E+00    | 1.0               |
| 1.558014093E+00    | 1.0               |
| 1.702494266E+00    | 1.0               |
| 1.860372599E+00    | 1.0               |
| 2.03289155E+00     | 1.0               |
| 2.221408795E+00    | 1.0               |
| 2.427407913E+00    | 1.0               |
| 2.65251006E+00     | 1.0               |
| 2.898486727E+00    | 1.0               |
| 3.167273683E+00    | 1.0               |
| 3.460986208E+00    | 1.0               |
| 3.781935737E+00    | 1.0               |
| 4.132648054E+00    | 1.0               |
| 4.515883168E+00    | 1.0               |
| 4.934657034E+00    | 1.0               |
| 5.392265286E+00    | 1.0               |
| 5.892309175E+00    | 1.0               |
| 6.438723907E+00    | 1.0               |
| 7.035809616E+00    | 1.0               |
| 7.688265201E+00    | 1.0               |
| 8.401225307E+00    | 1.0               |
| 9.180300732E+00    | 1.0               |
| 1.003162259E+01    | 1.0               |
| 1.096189053E+01    | 1.0               |
| 1.197842553E+01    | 1.0               |
| 1.308922742E+01    | 1.0               |
| 1.430303792E+01    | 1.0               |
| 1.562940936E+01    | 1.0               |
| 1.707877993E+01    | 1.0               |
| 1.866255578E+01    | 1.0               |
| 2.039320079E+01    | 1.0               |
| 2.228433464E+01    | 1.0               |

**KEY**

- Bioassay Predictions
- Measurement Data
- Measurement Fit Output



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**Feature Tour :**

**Click** on a [HOT ZONE](#) in the figure below - for a "pop-up" description of the function of that part of the screen (and/or control).

Table Tool: Urine Data

|    | Specified Time (d) | Collection period (d) | Calculated Rate(pCi/d) | Measurement Time (d) | Collection period (d) | Measurement Rate(pCi/d) | Data Type | Measurement Error | Error Distribution | Theo Rate |
|----|--------------------|-----------------------|------------------------|----------------------|-----------------------|-------------------------|-----------|-------------------|--------------------|-----------|
| 1  | 1.000E+00          | 1.000E+00             | 8.5863E-04             | 2.000E+00            | 1.000E+00             | 4.000E-03               | <LOD      | 1.800E+00         | LOGNORM            | 1         |
| 2  | 1.092733547E+00    | 1.000E+00             | 9.8211E-04             | 3.000E+00            | 1.000E+00             | 4.000E-03               | <LOD      | 1.800E+00         | LOGNORM            | 2         |
| 3  | 1.194066606E+00    | 1.000E+00             | 1.1006E-03             | 4.000E+00            | 1.000E+00             | 4.000E-03               | <LOD      | 1.800E+00         | LOGNORM            | 3         |
| 4  | 1.304796638E+00    | 1.000E+00             | 1.2054E-03             | 7.600E+01            | 1.000E+00             | 4.000E-03               | <LOD      | 1.800E+00         | LOGNORM            | 4         |
| 5  | 1.425795059E+00    | 1.000E+00             | 1.2987E-03             | 1.230E+02            | 1.000E+00             | 1.600E-01               | Real      | 1.800E+00         | LOGNORM            | 7         |
| 6  | 1.558014093E+00    | 1.000E+00             | 1.3871E-03             | 1.500E+02            | 1.000E+00             | 7.000E-02               | Real      | 1.800E+00         | LOGNORM            | 8         |
| 7  | 1.702494268E+00    | 1.000E+00             | 1.4771E-03             | 1.860E+02            | 1.000E+00             | 7.000E-02               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 8  | 1.860372599E+00    | 1.000E+00             | 1.5737E-03             | 2.090E+02            | 1.000E+00             | 1.000E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 9  | 2.03289155E+00     | 1.000E+00             | 1.6803E-03             | 2.640E+02            | 1.000E+00             | 1.600E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 10 | 2.221408795E+00    | 1.000E+00             | 1.7994E-03             | 2.830E+02            | 1.000E+00             | 1.800E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 11 | 2.427407913E+00    | 1.000E+00             | 1.9331E-03             | 2.930E+02            | 1.000E+00             | 2.000E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 12 | 2.65251006E+00     | 1.000E+00             | 2.0833E-03             | 3.280E+02            | 1.000E+00             | 3.100E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 13 | 2.898486727E+00    | 1.000E+00             | 2.2517E-03             | 3.590E+02            | 1.000E+00             | 2.300E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 14 | 3.167273683E+00    | 1.000E+00             | 2.4398E-03             | 3.870E+02            | 1.000E+00             | 2.600E-01               | Real      | 1.800E+00         | LOGNORM            | 1         |
| 15 | 3.460986208E+00    | 1.000E+00             | 2.6498E-03             | 4.1350E+02           | 1.000E+00             | 2.000E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 16 | 3.781935737E+00    | 1.000E+00             | 2.8832E-03             | 5.060E+02            | 1.000E+00             | 3.700E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 17 | 4.132648054E+00    | 1.000E+00             | 3.1423E-03             | 5.930E+02            | 1.000E+00             | 2.300E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 18 | 4.515883168E+00    | 1.000E+00             | 3.429E-03              | 6.850E+02            | 1.000E+00             | 2.400E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 19 | 4.934657034E+00    | 1.000E+00             | 3.7453E-03             | 7.760E+02            | 1.000E+00             | 2.400E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 20 | 5.392265286E+00    | 1.000E+00             | 4.0939E-03             | 8.700E+02            | 1.000E+00             | 3.300E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 21 | 5.892309175E+00    | 1.000E+00             | 4.477E-03              | 9.640E+02            | 1.000E+00             | 3.100E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 22 | 6.438723907E+00    | 1.000E+00             | 4.8974E-03             | 1.048E+03            | 1.000E+00             | 3.500E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 23 | 7.035809616E+00    | 1.000E+00             | 5.3576E-03             | 1.143E+03            | 1.000E+00             | 3.700E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 24 | 7.688265201E+00    | 1.000E+00             | 5.8607E-03             | 1.231E+03            | 1.000E+00             | 5.800E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 25 | 8.401225307E+00    | 1.000E+00             | 6.4095E-03             | 1.295E+03            | 1.000E+00             | 2.100E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 26 | 9.180300732E+00    | 1.000E+00             | 7.0072E-03             | 1.481E+03            | 1.000E+00             | 4.300E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 27 | 1.003162259E+01    | 1.000E+00             | 7.6572E-03             | 1.668E+03            | 1.000E+00             | 4.100E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 28 | 1.096189053E+01    | 1.000E+00             | 8.3625E-03             | 1.847E+03            | 1.000E+00             | 4.400E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 29 | 1.197942553E+01    | 1.000E+00             | 9.1269E-03             | 2.027E+03            | 1.000E+00             | 3.500E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 30 | 1.308922274E+01    | 1.000E+00             | 9.954E-03              | 2.212E+03            | 1.000E+00             | 1.600E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 31 | 1.430303792E+01    | 1.000E+00             | 1.0849E-02             | 2.212E+03            | 1.000E+00             | 2.100E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 32 | 1.562940936E+01    | 1.000E+00             | 1.1812E-02             | 2.212E+03            | 1.000E+00             | 1.600E-01               | Real      | 1.800E+00         | LOGNORM            | 3         |
| 33 | 1.707877993E+01    | 1.000E+00             | 1.2852E-02             | 2.575E+03            | 1.000E+00             | 2.200E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 34 | 1.866255578E+01    | 1.000E+00             | 1.3971E-02             | 2.689E+03            | 1.000E+00             | 2.800E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 35 | 2.039320079E+01    | 1.000E+00             | 1.5176E-02             | 2.881E+03            | 1.000E+00             | 1.200E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |
| 36 | 2.228433464E+01    | 1.000E+00             | 1.6472E-02             | 3.100E+03            | 1.000E+00             | 2.800E-01               | Real      | 1.800E+00         | LOGNORM            | 2         |

KEY

- Bioassay Predictions
- Measurement Data
- Measurement Fit Output

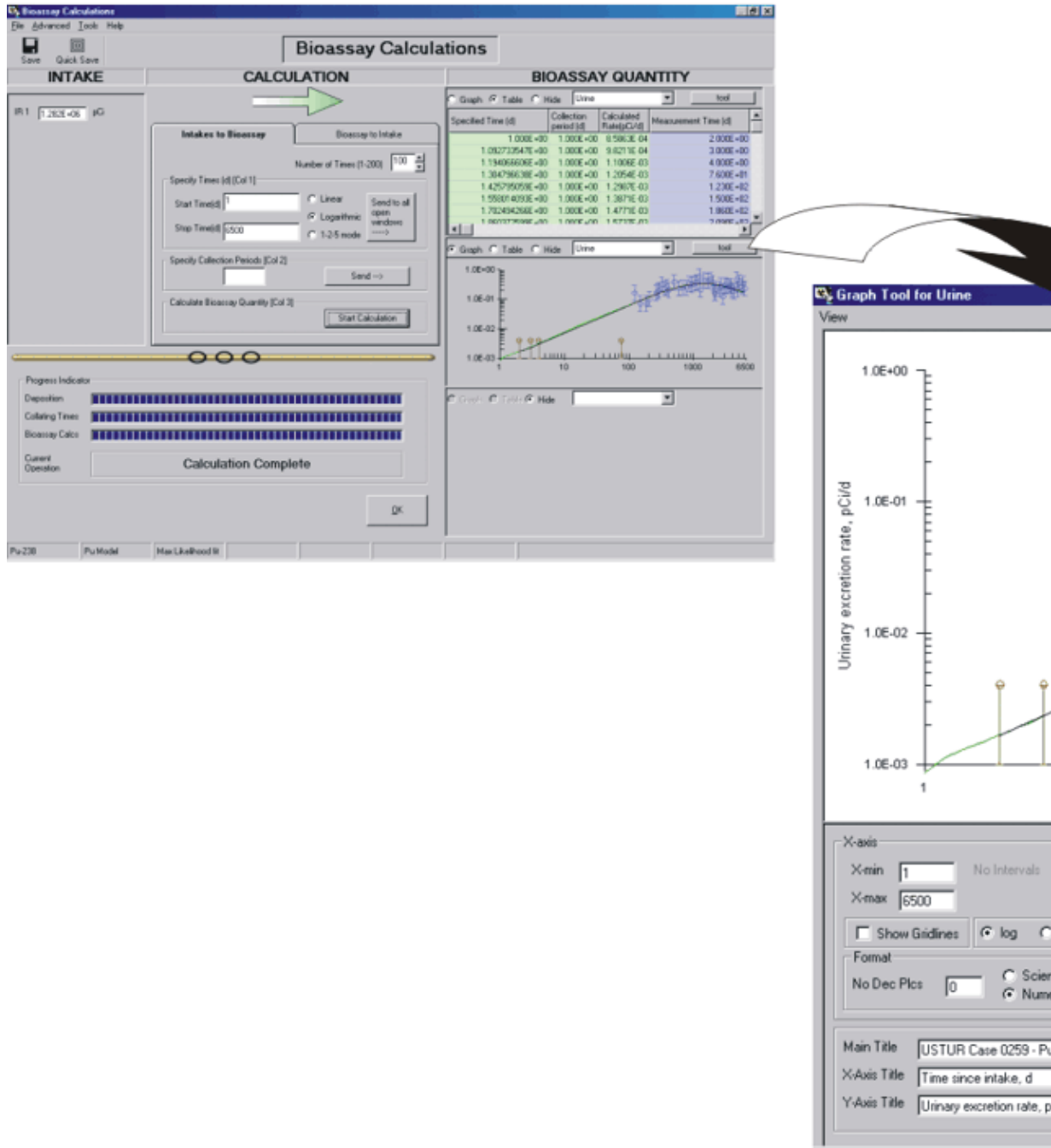
No Rows: 100

OK

Figure 2.10. What's in the Table Tool?

## Visual Tour of the Graph Tool





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**Feature Tour :**

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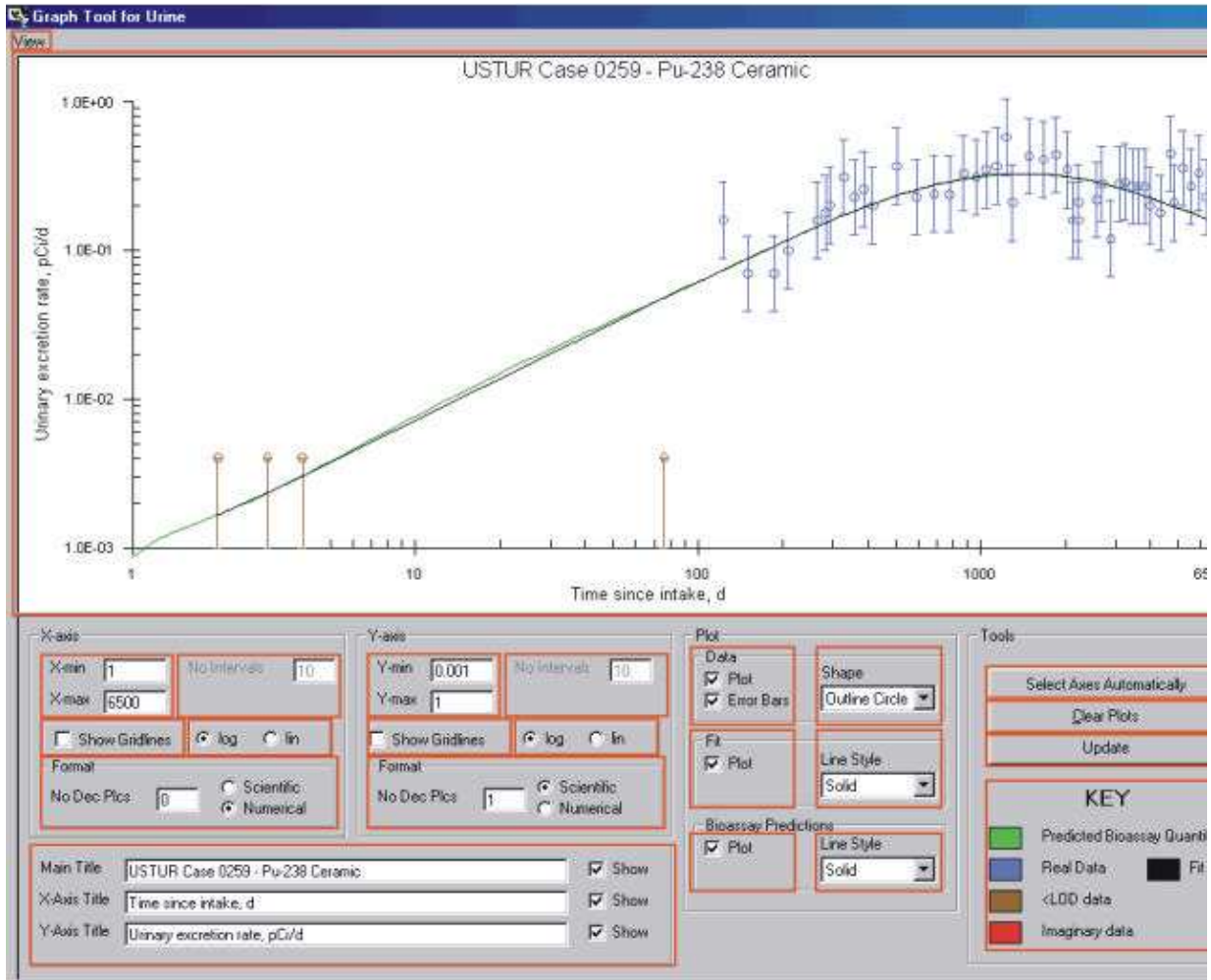


Figure 2.12. What's in the [Graph Tool](#)?

## Visual Tour of Dose Screen



**DOSE**

Indicator Nuclide

| Target Organs   | Cont. to Eff Dose (Sv) IR(1) | Cont. to Eff Dose (Sv) IR(2) | Cont. to Eff Dose (Sv) IR(3) | Effective Dose (Sv) Total |
|-----------------|------------------------------|------------------------------|------------------------------|---------------------------|
| Adrenals        | 0.00E+00                     | 0.00E+00                     | 0.00E+00                     | 0.00E+00                  |
| Urinary Bladder | 3.93E-05                     | 4.19E-05                     | 2.26E-05                     | 1.04E-04                  |
| Brain           | 0.00E+00                     | 0.00E+00                     | 0.00E+00                     | 0.00E+00                  |
| Breast          | 3.93E-05                     | 4.19E-05                     | 2.26E-05                     | 1.04E-04                  |
| Gall Bladder    | 0.00E+00                     | 0.00E+00                     | 0.00E+00                     | 0.00E+00                  |
| Heart Wall      | 0.00E+00                     | 0.00E+00                     | 0.00E+00                     | 0.00E+00                  |
| Kidneys         | 0.00E+00                     | 0.00E+00                     | 0.00E+00                     | 0.00E+00                  |

Associated Radionuclides

| Target Organs   | Eff Dose from Pu-239 (Sv) | Eff Dose from Am-241 (Sv) | Eff Dose from ALL AR's (Sv) |
|-----------------|---------------------------|---------------------------|-----------------------------|
| Adrenals        | 0.00E+00                  | 0.00E+00                  | 0.00E+00                    |
| Urinary Bladder | 1.76E-05                  | 6.18E-06                  | 2.37E-05                    |
| Brain           | 0.00E+00                  | 0.00E+00                  | 0.00E+00                    |
| Breast          | 1.76E-05                  | 6.18E-06                  | 2.37E-05                    |
| Gall Bladder    | 0.00E+00                  | 0.00E+00                  | 0.00E+00                    |
| Heart Wall      | 0.00E+00                  | 0.00E+00                  | 0.00E+00                    |
| Kidneys         | 0.00E+00                  | 0.00E+00                  | 0.00E+00                    |

**ICRP Defaults**

This option allows you to specify the radiation weighting factors that will be used in the calculation of equivalent dose.

Alpha: 20  
 Beta: 1  
 Gamma: 1

ICRP Defaults  
 User Defined  
 Clear



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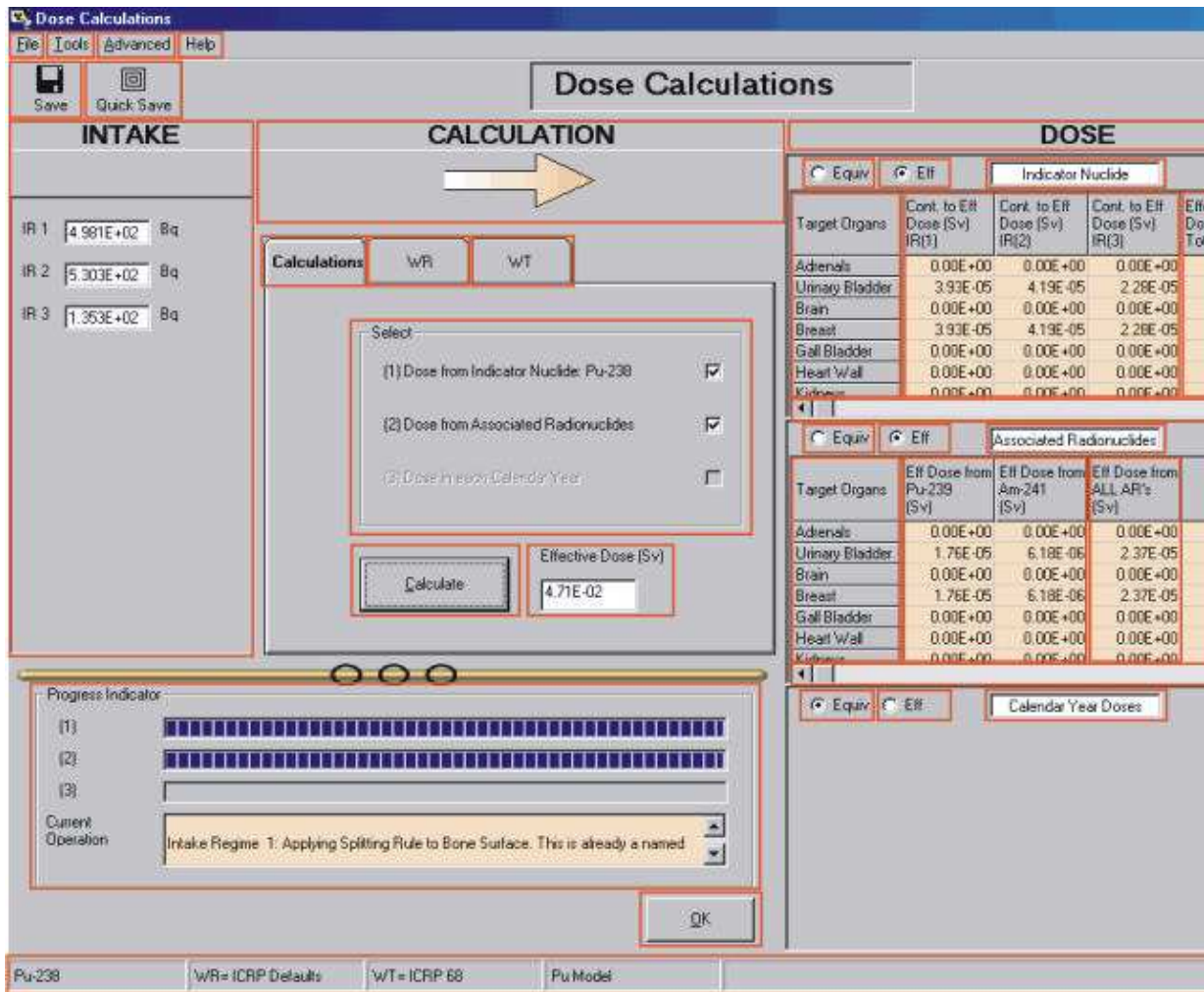


Figure 2.14. What's in the [Dose Calculations](#) screen?